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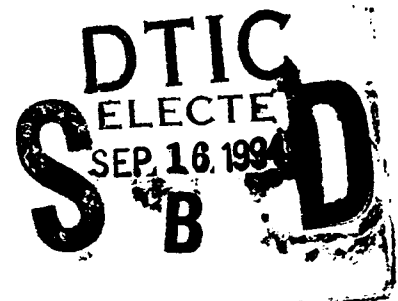


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28 January 1994

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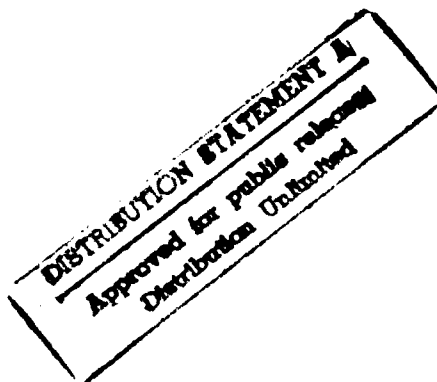
**Library Capability Demonstration**  
Central Archive for Reusable Defense Software  
(CARDS)

Informal Technical Data



Central Archive for Reusable Defense Software

STARS-VC-B018/002/00  
28 January 1994



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CDRL: B018  
28 January 1994

**INFORMAL TECHNICAL REPORT  
For The  
SOFTWARE TECHNOLOGY FOR ADAPTABLE, RELIABLE SYSTEMS  
(STARS)**

*Library Capability Demonstration  
Central Archive for Reusable Defense Software  
(CARDS)*

STARS-VC-B018/002/00  
28 January 1994

Data Type: Informal Technical Data

CONTRACT NO. F19628-93-C-0130

Prepared for:

Electronic Systems Center  
Air Force Material Command, USAF  
Hanscom AFB, MA 01731-2816

Prepared By:

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Data Reference: STARS-VC-B018/002/00  
INFORMAL TECHNICAL REPORT  
Library Capability Demonstration

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INFORMAL TECHNICAL DOCUMENT  
Library Capability Demonstration  
Central Archive for Reusable Defense Software (CARDS)

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(signatures on File)

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INFORMAL TECHNICAL REPORT  
Library Capability Demonstration

## **ABSTRACT**

This demonstration was developed under the Central Archive for Reusable Defense Software (CARDS) Program to demonstrate CARDS ability to support heterogeneous computing environments of the DoD. This demonstration illustrates the capability for a remote user to view, via the library, a demonstration of a component running on a non-Unix platform, such as a 386/486 class PC.

# REPORT DOCUMENTATION PAGE

Form Approved  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 28 January 1994		3. REPORT TYPE AND DATES COVERED Informal Technical Report	
4. TITLE AND SUBTITLE  Library Capability Demonstration Central Archive for Reusable Defense Software				5. FUNDING NUMBERS  F19628-93-C-0130	
6. AUTHOR(S)  Gene Humphrey Brian Massey					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Unisys Corporation 12010 Sunrise Valley Drive Reston, VA 22091				8. PERFORMING ORGANIZATION REPORT NUMBER  STARS-VC-B018/002/00	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)  Department of the Air Force 12010 Sunrise Valley Drive Reston, VA 22091				10. SPONSORING / MONITORING AGENCY REPORT NUMBER  B018	
11. SUPPLEMENTARY NOTES					
12a. DISTRIBUTION / AVAILABILITY STATEMENT  Distribution "A"				12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words)  This demonstration was developed under the Central Archive for Reusable Defense Software (CARDS) Program to demonstrate CARDS ability to support heterogeneous computing environments of the DoD. This demonstration illustrates the capability for a remote user to view, via the library, a demonstration of a component running on a non-Unix platform, such as a 386/486 class PC.					
14. SUBJECT TERMS				15. NUMBER OF PAGES 19	
				16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT  SAR		



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**Central Archive for Reusable  
Defense Software  
(CARDS)**

***Library Capability Demonstration***  
***CDRL: B018***  
***STARS-VC-B018/002/00***

**8 December 1993**

**Carlos Martinez, Brian Massey, Gene Humphrey  
AETECH Federal Systems Division**

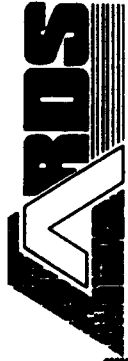
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## SOW

“As a step towards demonstrating CARDS ability to support heterogeneous computing environments of the DoD, the contractor shall provide the capability for a remote user to view, via the library, a demonstration of a component running on a non-Unix platform, such as a 386/486 class PC.”





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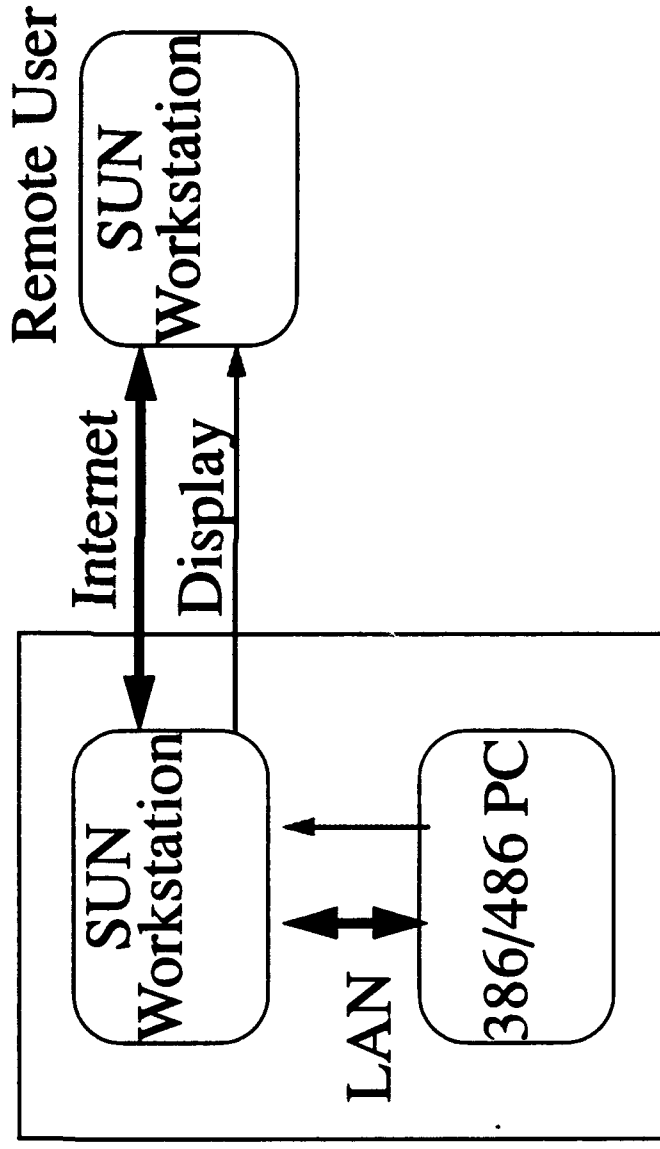
## ***Task Approach***

- **Contact commercial vendors that dealt with PC-to-UNIX connectivity products**
- **Develop a product data checklist for product comparison**
- **Evaluate applicable COTS products**
- **Develop the Product Availability Survey Report**
- **Choose product via a hands-on testing**
- **Develop automated means to download and execute applications**
- **Integrate DOS application into the Command Center Library (CCL)**
- **Demonstrate heterogeneous functionality**
- **Convert Product Availability Survey Report into SGML**

## Overview

The CCL, in its current state, is limited to components that are only executable on a UNIX platform. Ultimately, to provide support for the heterogeneous computing platforms throughout the DoD, this limitation must be overcome. The command center needs to be able to store and execute applications that run on these platforms. The initial non-UNIX platform is a 386/486 DOS PC.

### Reuse Library





## ***Product Availability Survey Report***

- **Executive Summary**
- **Background**
  - **What - Why - What's included - What is not included**
- **Statement of Problem**
  - **Problem Defined - Why Solve**
- **State-of-the-Art in UNIX-to-PC Connectivity**
- **Possible Options**
  - **DESeqview/X - OmniWare - PC2X - Network PC Access**
- **Recommendation**
  - **Which product and why**
- **Appendix A -- Vendor List**
- **Appendix B -- References**
- **Appendix C -- Condensed Product Data Forms**



## ***Significant Factors***

- **Security**
  - **DOS Security**
  - **UNIX security**
- **Performance**
  - **Sharing applications**
  - **Sharing data**
- **Cost**
  - **Cost of DOS PC**
  - **Cost of networking hardware/software**
  - **Cost of connectivity product hardware/software**
  - **Cost of UNIX station**
- **Error Handling**
  - **Error detection**
  - **Error recovery**



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## ***Data Sharing Challenges in the CCL***

- **File Transferring**
  - Copying files from one machine to another, e.g. FTP, uploading and downloading via modem connections
- **File Sharing**
  - Allows users to view and access files located on a remote machine as if they were local files

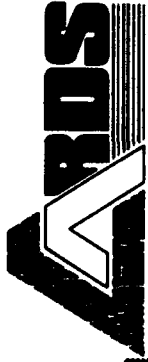
## ***Application Sharing Challenges in the CCL***

- **Definition**
  - The sharing of applications on computer systems across a network
- **DOS PC to UNIX**
  - COTS products mirror the DOS PC's display within an X Window on the UNIX system
  - COTS software supports an X based client/server environment along with multitasking (DESeqview/X)



## ***DESeqview/X***

- **Features**
  - **Allows windowed multitasking on a PC**
  - **Provides a graphic desktop and allows remote computing to and from other X based machines**
- **Strengths**
  - **Allows a user to execute DOS text-based applications and MS Windows applications on a remote UNIX system**
  - **Provides bi-directional connectivity**
  - **Everything maintained by the DOS PC**
  - **Provides security measures**
- **Weaknesses**
  - **DESeqview/X does not adequately support many graphics cards for the PC**
  - **DOS graphics-based applications are not supported**
  - **Script automation problems**
  - **Ties up large amount of CPU cycles and RAM on DOS PC**



## **PC2X**

- **Features**
  - **Software that allows a user to control DOS PC applications from a UNIX workstation**
- **Strengths**
  - **Utilizes very little CPU cycles and RAM**
  - **Client/Server software with a PC server being a TSR**
  - **Easy to install**
  - **Anything that will run on the PC will run within the DOS window**
- **Weaknesses**
  - **Slow (Windows)**
  - **Script automation problems**
  - **Does not support SVGA mode display**
  - **PC is not usable while a connection is resident**
  - **Security**



## **Omni-Ware**

- **Features**
  - **Omni-Ware is a network server that brings high performance PC capabilities to UNIX users**
- **Strengths**
  - **Very quick**
  - **Machine comes preconfigured**
  - **PC files can be stored on a host, utilizing logical disk, or on a local hard disk**
  - **File transfer is easy from UNIX to logical disk**
  - **Dedicated machine**
- **Weaknesses**
  - **Will not be able to be used in bi-directional connectivity**
  - **Supports only VGA graphics**
  - **Security**





## ***Recommendation***

**We recommend Omni-Ware from Logicaft as the best overall UNIX-to-PC connectivity product for use in the CARDS Command Center Library (CCL) for the following reasons:**

- **The price of a single-user hardware node (approximately \$5000) is reasonably consistent with the price of a high performance PC with attendant network hardware and software**
- **The product performance far exceeded that of other products we tested**
- **The limitation of only one PC session at a time should not materially affect its intended use in the CCL since it will only be used to test operate DOS applications rather than being used for production work**
- **In addition to text-based applications, it can also run any graphics-based DOS application, not just MS Windows applications**
- **It can be configured to provide bi-directional connectivity which is not a current requirement but is expected to be in the future**
- **It allows for automated execution through scripting**



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## ***Preparing DOS Applications***

- **Install application on Omni-Ware node**
- **Develop specialized batch files**
- **Create self extracting archive**
- **Place archive into CCL database**



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## ***About the Demonstration***

- The DOS product Electro-Optical Climatology will be demonstrated
- Omni-Ware client software installed only on the machine *golf*
- Demonstration will be done on the machine *CRUE* in order to demonstrate the ability to support execution from a remote system
- The heterogeneous demonstration is not on the operational systems
- The heterogeneous capability is not planned for release



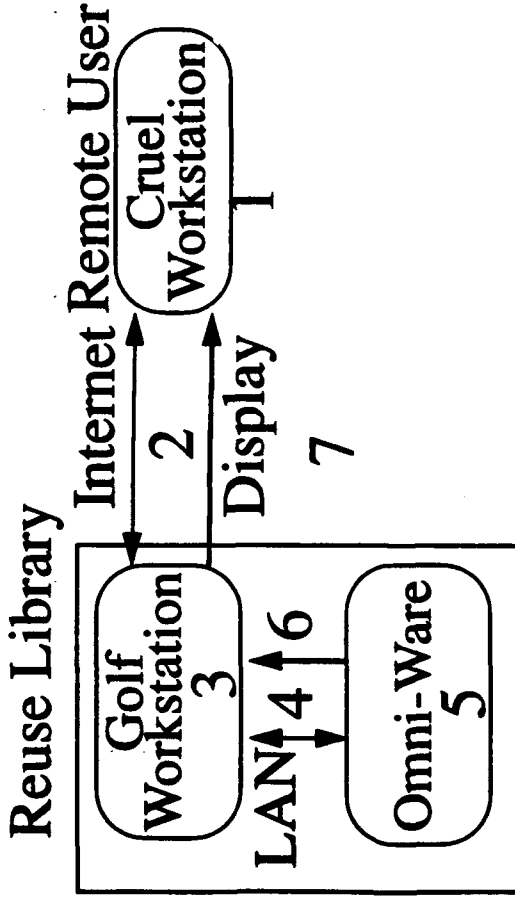
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## ***Details of the Demonstration***

- **Initiate CCL session**
- **Search for Electro-Optical Climatology node**
- **Select Electro-Optical Climatology node and choose menu option *run\_demo***
- **Once Omni-Ware session starts, the application is automatically executing**
- **Quitting the application terminates the Omni-Ware session**



## Demonstration



- 1 — Remote user is executing the CARDS CCL from the reuse library and prompts the CCL to execute a DOS application
- 2 — A call is sent across Internet to the reuse library
- 3 — Golf is where the Omni-Ware product is installed. It prompts Omni-Ware to start a session
- 4 — The command is sent across the LAN to Omni-Ware
- 5 — Omni-Ware responds to the operation by starting a new session
- 6 — The DOS PC monitor is sent back across the LAN to golf so that a DOS window appears on the UNIX terminal with the application executing
- 7 — The display is received by golf but golf is told to send the display back to cruel. Cruel receives and displays the execution of the product

## APPENDIX A

# Demonstration Script for the Heterogeneous Capability

The demonstration instructions provided below describe a sample execution of the Electro-Optical Climatology (EOC) program. This document assumes the Reuse Library Framework (RLF) Graphical Browser is currently running. Procedures to be performed are preceded by an equals sign and a right arrow(=>). Steps to complete each procedure are indented and listed below their corresponding procedure. If you are prompted to enter information from the keyboard, the correct response will be preceded by a hyphen and a right arrow(->). Keys to be pressed are enclosed in arrows(< >). This paper is divided into two sections: 'Executing the EOC' and 'Using the EOC'.

### \*\* Executing the Electro-Optical Climatology program \*\*

=> Perform search for EOC node:

Click on SEARCH

=> Enter search string:

-> Electro

Click on OK or <RETURN>

=> Select node:

Click on ELECTRO\_OPTICAL\_CLIMATOLOGY

Click on APPLY

=> Browser brings the EOC node into view.

=> Pull down node menu:

Move mouse above node name until a tiny  
black box appears

Click and hold on black box  
Continue holding mouse button

=> Browser will display node menu.

=> View sub-menu:

Continue holding mouse button  
Move mouse to right of PERFORM ACTION

=> Browser will display perform action sub-menu.

=> Execute EOC program:

Continue holding mouse button  
Release mouse button on RUN\_DEMO

=> Omni-Ware will be booted.

=> The EOC will run within the Omni-Ware DOS window.

\*\* Using the Electro-Optical Climatology program \*\*

The EOC is a USAF application for determining climatological transmittance information used in planning, training and contingency support for employment of Precision Guided Munitions and Target Acquisition Systems. The following procedures will guide you through the main features of the EOC program.

=> Switch from UNIX to DOS mouse cursor:

Move mouse cursor within DOS window  
Click middle mouse button

=> Exit Introduction window:

<ESC>

=> Choose station sub-directory:

Click on STATION  
Click on EMIRITES  
Click on OK

=> Close station window:

<ESC>

=> Select a quadrant:

Click on VIDEO  
Click on UPPER\_RIGHT\_QUADRANT

=> Select a station:

Click on STATION  
Click on RASALKHAIMAH  
<RETURN>

=> View map of all stations. Selected station is highlighted:  
Click on VIDEO  
Click on MAP

=> Return to quadrant view:  
<ESC>

=> Choose month:  
Click on MONTH  
Click on MARCH

=> Choose time of day:  
Click on TIME  
Click on 0600\_GMT (Time will be irrelevant  
on some graph types)

=> Choose type of information to be displayed on graph:  
Click on OUTPUT  
Click on PRECIPITATION

=> Update quadrant map with your newly selected options:  
Click on DISPLAY

=> Reactive menu:  
<ALT> or Click right mouse button

=> Enlarge quadrant map to whole screen:  
Click on VIDEO  
Click on ENLARGE

=> Return to quadrant view:  
<ESC>

=> Read station narrative:  
Click on OUTPUT  
Click on STATION\_NARRATIVE

=> Exit narrative view:  
<ESC>

=> View weather category table:  
Click on OUTPUT  
Click on WEATHER\_CATEGORY

=> Exit weather category table:  
<ESC>



=> View transmittance versus ceiling table:

Click on OUTPUT

Click on TRANSMITTANCE\_VS\_CEILING

=> Exit ceiling versus transmittance table:

<ESC>

=> Exit EOC program:

Click on QUIT

<RETURN>